

WHAT IS CLAIMED IS:

1. A method for controlling an amplifier in an optical network, comprising:

5 determining primary pump power information for a primary amplifier;

communicating the primary pump power information to a secondary amplifier coupled to the primary amplifier;

10 generating secondary pump control information for the secondary amplifier based on the primary pump power information; and

amplifying a first optical signal at the secondary amplifier based on the secondary pump control information.

15 2. The method of Claim 1, further comprising amplifying a second optical signal at the primary amplifier, wherein the first optical signal and the second optical signal comprise the same channels.

20 3. The method of Claim 1, further comprising: measuring an input power of a third optical signal at the primary amplifier;

measuring an output power of the third optical signal at the primary amplifier; and

25 wherein determining primary pump power information for a primary amplifier comprises determining primary pump power information based on the input power and the output power.

30 4. The method of Claim 1, wherein generating secondary pump control information for the secondary amplifier based on the primary pump power information

comprises adjusting parameters of the primary pump power information.

5 5. The method of Claim 4, wherein adjusting
parameters of the primary pump power information
comprises adjusting for a difference in relative gains of
the primary amplifier and secondary amplifier.

10 6. The method of Claim 4, wherein adjusting
parameters of the primary pump power information
comprises adjusting for a difference in relative power
ratio of the primary amplifier and the secondary
amplifier.

15 7. The method of Claim 1, wherein:
the primary amplifier comprises a pre-amplifier of
an optical node; and
the secondary amplifier comprises a distributing
amplifier of the optical node.

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8. The method of Claim 1, wherein the primary
amplifier and the secondary amplifier comprise erbium
doped fiber amplifiers (EDFAs).

9. A system for controlling an amplifier in an optical network, comprising:

a primary amplifier coupled to a secondary amplifier, the primary amplifier comprising automatic
5 gain control circuitry operable to:

determine primary pump power information for the primary amplifier; and

communicate the primary pump power information to the secondary amplifier; and

10 the secondary amplifier comprising:

tuning circuitry operable to generate secondary pump control information for the secondary amplifier based on the primary pump power information; and

gain medium operable to amplify a first optical
15 signal based on the secondary pump control information.

10. The system of Claim 9, wherein the primary amplifier comprises gain medium operable to amplify a second optical signal, wherein the first optical signal
20 and the second optical signal comprise the same channels.

11. The system of Claim 9, wherein the primary amplifier further comprises:

an input monitor operable to measure an input power
25 of a third optical signal;

an output monitor operable to measure an output power of the third optical signal; and

wherein automatic gain control circuitry operable to determine primary pump power information comprises
30 automatic gain control circuitry operable to determine primary pump power information based on the input power and the output power.

12. The system of Claim 9, wherein tuning circuitry operable to generate secondary pump control information for the secondary amplifier based on the primary pump power information comprises tuning circuitry operable to adjust parameters of the primary pump power information.

13. The system of Claim 12, wherein tuning circuitry operable to adjust parameters of the primary pump power information comprises gain tuning circuitry operable to adjust for a difference in relative gains of the primary amplifier and secondary amplifier.

14. The system of Claim 12, wherein tuning circuitry operable to adjust parameters of the primary pump power information comprises power ratio tuning circuitry operable to adjust for a difference in relative power ratio of the primary amplifier and the secondary amplifier.

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15. The system of Claim 9, wherein:
the primary amplifier comprises a pre-amplifier of an optical node; and

the secondary amplifier comprises a distributing amplifier of the optical node.

16. The system of Claim 9, wherein the primary amplifier and the secondary amplifier comprise erbium doped fiber amplifiers (EDFAs).

17. A system for controlling an amplifier in an optical network, comprising:

means for determining primary pump power information for a primary amplifier;

5 means for communicating the primary pump power information to a secondary amplifier coupled to the primary amplifier;

means for generating secondary pump control information for the secondary amplifier based on the
10 primary pump power information; and

means for amplifying a first optical signal at the secondary amplifier based on the secondary pump control information.

15 18. The system of Claim 17, further comprising means for amplifying a second optical signal at the primary amplifier, wherein the first optical signal and the second optical signal comprise the same channels.

20 19. The system of Claim 17, wherein means for generating secondary pump control information for the secondary amplifier based on the primary pump power information comprises means for adjusting parameters of the primary pump power information.

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20. The system of Claim 19, wherein means for adjusting parameters of the primary pump power information comprises means for adjusting for a difference in relative gains of the primary amplifier and
30 secondary amplifier.

21. The system of Claim 19, wherein means for
adjusting parameters of the primary pump power
information comprises means for adjusting for a
difference in relative power ratio of the primary
5 amplifier and the secondary amplifier.